

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A diode device comprising:

a ~~tubular~~ housing means;

a first electrode attached to one end of said ~~tubular~~ housing means;

a second electrode attached to an opposing end of said ~~tubular~~ housing means;

an electrical circuit connected to said electrodes;

a further pair of electrodes attached to an inner and outer face of said ~~tubular~~ housing means and attached to controlling circuitry whereby a length of said housing means may be modified by a signal applied to said further pair of electrodes;

wherein said housing means ~~comprises a means~~ consists of an actuating element whose length may be modified by a signal applied to said further pair of electrodes, whereby the magnitude of a distance separating said electrodes may be adjusted.

Claim 2 (currently amended): The diode device of claim 1 wherein said ~~actuating element~~ means whereby the magnitude of a distance separating said electrodes may be adjusted comprises a piezo-electric actuating element.

Claim 3 (currently amended): The diode device of claim 2 wherein said piezo-electric actuating element comprises quartz.

Claim 4 (currently amended): The diode device of claim 1 wherein said ~~tubular~~ housing means is tubular and has a circular cross-section.

Claim 5 (original): The diode device of claim 1 wherein said first electrode and said second electrode comprise a matched pair of electrodes.

Claim 6 (original): The diode device of claim 1 wherein said first electrode comprises titanium.

Claim 7 (original): The diode device of claim 1 wherein said second electrode comprises silver.

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Claim 8 (original): The diode device of claim 1 wherein said first electrode is in thermal contact with a heat source, and said second electrode is in thermal contact with a heat sink, and said electrical circuit connects said first and second electrodes to an electrical load.

Claim 9 (original): The diode device of claim 1 wherein said first electrode is in thermal contact with a mass to be cooled, and said second electrode is in thermal contact with a heat sink, and said electrical circuit connects said first and second electrodes to a power supply.

Claim 10 (original): The diode device of claim 1 wherein said diode device is selected from the group consisting of: a Power Chip, a Cool Chip or a Gap Diode.

Claim 11 (original): The diode device of claim 1 wherein said diode device is selected from the group consisting of: thermionic converter, thermotunneling converter, vacuum diode heat pump, and photoelectric converter.

Claim 12 (original): The diode device of claim 1 wherein the magnitude of a distance separating said electrodes is between 0.1 and 100 nm.

Claim 13 (original): A method for fabricating the diode device of claim 1 comprising the steps:

- (a) contacting a first composite to one end of a tubular actuating element;
- (b) introducing an electrically conducting material to an inner surface of said composite;
- (c) contacting a second composite to the other end of the tubular actuating element, wherein said composite is a matching electrode pair precursor comprising at least two different layers, such that an inner surface of said second composite is also in contact with the electrically conducting material;
- (d) sealing the contact between the first composite and the tubular element, and between the second composite and the tubular element;
- (e) separating the second composite along a boundary between two different layers and forming two matching electrodes.

Claim 14 (original): The method of claim 13 wherein said second composite comprises a silicon wafer, a layer of titanium, a layer of silver and a layer of copper.

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Claim 15 (original): The method of claim 13 wherein step (c) additionally comprises seating an alignment pin on said second composite into a locating hole on said first composite.

Claim 16 (original): The method of claim 13 wherein said second composite is fabricated according to the steps:

- (a) polishing at least a region around the periphery of a silicon wafer;
- (b) depositing a first layer on said silicon wafer;
- (c) depositing a second layer on said first layer;
- (d) forming a third layer on said second layer

Claim 17 (original): The method of claim 16 wherein said first layer comprises titanium.

Claim 18 (original): The method of claim 16 wherein said second layer comprises silver.

Claim 19 (original): The method of claim 16 wherein said third layer comprises copper.

Claim 20 (original): The method of claim 19 wherein the method for forming said third layer of copper comprises electrolytic growth of copper.

Claim 21 (original): The method of claim 19 additionally comprising the step of:

- (a) attaching an alignment pin to said third layer.

Claim 22 (original): The method of claim 21 wherein said attaching step comprises:

- (a) contacting said alignment pin with said third layer;
- (b) electrolytically growing copper from said third layer around the alignment pin.

Claim 23 (original): The method of claim 13 wherein said first composite comprises molybdenum.

Claim 24 (original): The method of claim 13 wherein said electrically conducting material comprises silver paste.

Claim 25 (original): The method of claim 13 wherein said electrically conducting material comprises liquid metal.

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Claim 26 (original): The method of claim 25 wherein said liquid metal comprises gallium and indium.